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Date	08/01/02	Serial #	09/328,646	Priority Application Date	06/09/99
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Where have you searched so far on this case?

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Other: _____

What relevant art have you found so far? Please attach pertinent citations or Information Disclosure Statements.

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Primary Refs Nonpatent Literature Other _____
Secondary Refs Foreign Patents
Teaching Refs

What is the topic, such as the novelty, motivation, utility, or other specific facets defining the desired focus of this search? Please include the concepts, synonyms, keywords, acronyms, registry numbers, definitions, structures, strategies, and anything else that helps to describe the topic. Please attach a copy of the abstract and pertinent claims.

hydrogensilsesquioxanes having the formula $(HSiO_{1.5})_n$,

hydrogensiloxanes having the formula $[(HSiO_{1.5})_xO_y]_n$,

wherein x = about 6 to about 20

y = 1 to about 3

n = 1 to about 4,000.

Staff Use Only	Type of Search	Vendors
Searcher: _____	Structure (#) _____	STN _____
Searcher Phone: _____	Bibliographic _____	Dialog _____
Searcher Location: STIC-EIC2800, CP4-9C18	Litigation _____	Questel/Orbit _____
Date Searcher Picked Up: _____	Fulltext _____	Lexis-Nexis _____
Date Completed: _____	Patent Family _____	WWW/Internet _____
Searcher Prep/Rev Time: _____	Other _____	Other _____
Online Time: _____		

FILE 'REGISTRY' ENTERED AT 10:15:34 ON 06 AUG 2002

E O1.5 H SI/MF
E H O1.5 SI/MF
E H O SI/MF
E H O SI/ELF
E H O1.5 SI/ELF
E H O1.5 SI/MF

L1 0 S H O1.5 SI

FILE 'HCAPLUS' ENTERED AT 10:17:37 ON 06 AUG 2002

L2 38 S HSIO1.5
L3 5630 S SILSESQUIOXANE
L4 10 S HYDROGENSILSESQUIOXANE
L5 10 S L4 NOT L2
L6 1590 S L3 AND (INSULAT? OR DIELECTRIC? OR OXIDE)
L7 470 S L6 AND SEMICONDUCTOR
L8 142 S L7 AND (INTERCONNECT? OR CONNECT?)
L9 139 S L7 AND (INTERCONNECT?)
L10 65621 S SILOXANES
L11 83489 S SILOXANE
L12 272 S HYDROSILOXANE
L13 37 S L12 AND (INSULAT? OR DIELECTRIC? OR OXIDE)
L14 37 S L13 NOT (L4 OR L2)
L15 2 S L12 AND (INSULAT? OR DIELECTRIC? OR OXIDE) (3N) (FILM OR LAYER?)
L16 123 S HYDROGENSILOXANE
L17 2 S L16 AND (INSULAT? OR DIELECTRIC? OR OXIDE) (3N) (FILM OR LAYER?)

L15 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2002 ACS
 AN 1996:466575 HCAPLUS
 DN 125:88927
 TI Semiconductive silicone rubber compositions with reduced variation of volume resistivity
 IN Ushio, Yoshito; Nakamura, Akito
 PA Dow Corning Toray Silicone, Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 08120176	A2	19960514	JP 1994-281194	19941020

AB The compns. comprise (A) 100 parts diorganopolysiloxanes having .gtoreq.2 Si-bonded alkenyl groups, (B) 2-30 parts carbon black, (C) 2-20 parts metal compd. elec. conductive whiskers, and (D) sufficient amt. of curing agents. Me₃SiO-terminated di-Me siloxane-Me vinyl siloxane copolymer (di-Me siloxane-Me vinyl siloxane mol ratio 99.84:0.16) 100, fumed SiO₂ 30, OH-terminated di-Me siloxane 5, Ketjenblack EC 4, and Dentall WK 200 (Sn oxide- and Sb oxide-coated K titanate whisker) 10 parts were compounded to give a silicone rubber base, 100 parts of which were mixed with 1 part 2,5-dimethylbis(2,5-tert-butylperoxy)hexane, pressed at 170.degree. for 10 min, and heated at 200.degree. for 4 h to give 10 sheets showing av. vol. resistivity 4.2 .times. 10⁵ .OMEGA.-cm and std. deviation of common logarithm of vol. resistivity 0.12.

L15 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2002 ACS
 AN 1981:210373 HCAPLUS
 DN 94:210373
 TI Organosilicon insulating compound hardened by a polyaddition reaction
 AU Nanysh'yan, S. R.; Severnyi, V. V.; Polees, A. B.; Ushanov, S. M.
 CS USSR
 SO Plast. Massy (1981), (3), 32
 CODEN: PLMSAI; ISSN: 0554-2901
 DT Journal
 LA Russian
 AB The title compd. (Komound 159-167) contg. a low-mol.-wt. org. polysiloxane I (m = 2-3, n .apprxeq. 103), prep'd. from .alpha.,w-dihydroxy(polydimethylsiloxane) and an appropriate vinyl-contg. organosilicon oligomer, and a crosslinking agent [(Me₃SiO_{0.6})_{0.1}(Me₂SiO)_{0.5}(MeHSiO)_{0.4}]_n (n = 10-12), prep'd. by cohydrolysis of the appropriate organochlorosilanes, gave, in the presence of the Speier catalyst (1% H₂PtCl₆ in iso-PrOH) after 50 min curing at 50.degree. proceeding by a polyaddn. mechanism, an **insulating coating** useful in the semiconductor industry and having tensile strength 3.5 MPa, bulk resistivity (1-5) .times. 10¹⁴ .OMEGA.cm, dielec. loss tangent 0.001 (1 MHz), and dielec. strength 25 kV/mm, along with acceptable relaxation and elastic properties.

L5 ANSWER 1 OF 10 HCAPLUS COPYRIGHT 2002 ACS
 AN 2002:327850 HCAPLUS
 DN 136:349352
 TI Method for determining side wall oxidation of low-k materials in vias and trenches
 IN Dunne, Jude A.
 PA Honeywell International Inc., USA
 SO U.S., 9 pp.
 CODEN: USXXAM
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6379870	B1	20020430	US 2000-614633	20000712

AB The invention provides a process for monitoring the quality of via or trench formation in the prodn. of a semiconductor device. More particularly, the invention pertains to a process for detecting side wall oxidn. of low dielec. const. materials during the formation of vias or trenches in dielecs. At least 1 via and/or trench is cleaved and contacted with a solvent to remove partially oxidized portions of dielecs. on the side walls, enabling defects to be visually inspected.

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 2 OF 10 HCAPLUS COPYRIGHT 2002 ACS
 AN 2002:241221 HCAPLUS
 DN 136:271732
 TI Method for fabricating semiconductor device capable of reducing parasitic capacitance and semiconductor device thereby
 IN Kim, Jae-hak; Sin, Hong-jae; Han, Jae-hyun
 PA S. Korea
 SO U.S. Pat. Appl. Publ., 10 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002036352	A1	20020328	US 2001-919340	20010730

PRAI KR 2000-43961 A 20000729

AB A semiconductor device capable of reducing parasitic capacitance and a method thereof are disclosed, the method including the steps of depositing sequentially an inorg. Si oxide layer and a low dielec. const. org. Si oxide layer on a substrate, forming a partial trench with a predetd. depth in the org. Si oxide layer by patterning, oxygenating an inner wall of the partial trench, and forming a trench by etching the partial trench with HF.

L5 ANSWER 3 OF 10 HCAPLUS COPYRIGHT 2002 ACS
 AN 2002:49710 HCAPLUS
 DN 136:301239
 TI Experimental analysis of high-resolution soft x-ray microscopy
 AU Chao, Weilun; Anderson, Erik H.; Denbeaux, Gregory; Harteneck, Bruce D.; Pearson, Angelic L.; Olynick, Deirdre L.; Schneider, Gerd; Attwood, David T., Jr.
 CS Center for X-ray Optics, Lawrence Berkeley National Laboratory, CA, 94720,

USA
 SO Proceedings of SPIE-The International Society for Optical Engineering (2001), 4499(X-Ray Micro- and Nano-Focusing: Applications and Techniques II), 134-141
 CODEN: PSISDG; ISSN: 0277-786X
 PB SPIE-The International Society for Optical Engineering
 DT Journal
 LA English
 AB The soft x-ray, full-field microscope XM-1 at Lawrence Berkeley National Lab.'s (LBNL) Advanced Light Source has already demonstrated its capability to resolve 25-nm features. This was accomplished using a micro zone plate (MZP) with an outer zone width of 25 nm. Limited by the aspect ratio of the resist used in the fabrication, the gold-plating thickness of that zone plate is around 40 nm. However, some applications, in particular, biol. imaging, prefer improved efficiency, which can be achieved by high-aspect-ratio zone plates. This was accomplished by using a bilayer-resist process in the zone plate fabrication. As the first attempt, a 40-nm-outer-zone-width MZP with a nickel-plating thickness of 150 nm (aspect ratio of 4:1) was successfully fabricated. Relative to the 25-nm MZP, this zone plate is ten times more efficient. Using this high-efficiency MZP, a line test pattern with half period of 30 nm is resolved by the microscope at photon energy of 500 eV. Furthermore, with a new multilayer mirror, the XM-1 can now perform imaging up to 1.8 keV. An image of a line test pattern with half period of 40 nm has a measured modulation of 90%. The image was taken at 1.77 keV with the high-efficiency MZP with an outer zone width of 35 nm and a nickel-plating thickness of 180 nm (aspect ratio of 5:1). XM-1 provides a gateway to high-resoln. imaging at high energy. The normalized frequency response, which is the ratio of the power d. of the soft x-ray image to that of the SEM image, is shown in this paper.

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2002 ACS
 AN 2001:911596 HCAPLUS
 DN 136:254472
 TI Substrate cooling efficiency during cryogenic inductively coupled plasma polymer etching for diffractive optics on membranes
 AU Olynick, Deirdre L.; Anderson, Erik H.; Harteneck, Bruce; Veklerov, Eugene
 CS Lawrence Berkeley National Laboratory, Berkeley, CA, 94530, USA
 SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (2001), 19(6), 2896-2900
 CODEN: JVTBD9; ISSN: 0734-211X
 PB American Institute of Physics
 DT Journal
 LA English
 AB High-resoln. diffractive optics on membranes have been fabricated using a bilayer resist system consisting of **hydrogensilsesquioxane** as a neg. electron-beam imaging layer and hardbaked AZPN114 as the underlay. To minimize sidewall etching of the polymer, the AZPN114 layer was etched at -100.degree.C in a cryogenically cooled inductively coupled plasma etcher. Features fabricated on Si supported membrane wafers, where the areas of interest are sep'd. from the platen by the wafer thickness, provide an addnl. challenge to the low-temp. dry etch process due to low cooling efficiency (and thus membrane heating). Using cooling theory and exptl. verification we look at membrane cooling efficiency for different hardware and membrane size combinations. Diffusive cooling in membranes less than 140 .mu.m wide dominates membrane cooling during the etch process. With these small membranes we have fabricated high efficiency

x-ray zone plates with linewidths as small as 30 nm and 6:1 aspect ratios.
 RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 5 OF 10 HCAPLUS COPYRIGHT 2002 ACS
 AN 2001:888112 HCAPLUS
 DN 136:355763
 TI Characterization of poly(silsesquioxane) by thermal curing
 AU Yang, Chang-Chung; Chen, Wen-Chang; Chen, Li-Mei; Wang, Chao-Jen
 CS Department of Chemical Engineering, National Taiwan University, Taipei,
 Taiwan
 SO Proceedings of the National Science Council, Republic of China, Part A:
 Physical Science and Engineering (2001), 25(6), 339-343
 CODEN: PNAEE2; ISSN: 0255-6588
 PB National Science Council
 DT Journal
 LA English
 AB The structures and properties of three poly(silsesquioxane) (POSS) films
 were studied, including hydrogen silsesquioxane (HSQ), Me silsesquioxane
 (MSQ), and hyrido-organo siloxane polymer (HOSP). The cage structures of
 the POSS films were transformed into network structures by means of
 thermal curing. The order of the ratios of network/cage transformation
 after thermal curing was HSQ > MSQ > HOSP. This was the same as the order
 of the refractive indexes of the studied POSS films because of the
 variation of the molar volume due to the network/cage ratio. The
 structural conversion of the MSQ film was studied at four different temps.
 of 200, 250, 300, and 350.degree.C under a time range of 0 to 60 min. The
 exptl. results show that the structural conversion could be explained
 based on two-stage zero order kinetics. The rate const. for the first
 stage was one or two orders of magnitude greater than that for the second
 stage. The activation energy and frequency factor of network/cage
 transformation were 0.38 eV and 1.21 .times. 10² s⁻¹ for the first stage
 while those for the second stage were 0.14 eV and 8.8 .times. 10⁻³ s⁻¹,
 resp. The smaller frequency factor of the second stage compared to that
 of the first stage probably occurred because the network structure of the
 second stage limited the structural transformation. These results suggest
 that the structure and properties of the POSS film depend strongly on the
 conditions of thermal curing.

RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2002 ACS
 AN 1998:596161 HCAPLUS
 DN 129:224543
 TI Formation of organic solvent-insoluble hydrogensilsesquioxane
 coating on semiconductor substrate
 IN Bremmer, Jeffrey Nicholas; Liu, Youfan
 PA Dow Corning Corp., USA
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10242137	A2	19980911	JP 1998-25938	19980206
	TW 419719	B	20010121	TW 1998-87101518	19980205
PRAI	US 1997-798405	A	19970207		

AB The insol. coating is formed on a semiconductor substrate by (a) applying

a compn. contg. org. solvent-sol. **hydrogensilsesquioxanes** and
 (b) heating at .1toreq.375.degree. for enough time so that the coating is converted to an insol. coating whose content of H is more than .gtoreq.80% of the content of SiH in the precursors. The coating is for making smooth surface on the substrate and the stress in the coating is lowered without affecting of other characteristics, e.g., dielec. const., etc.

L5 ANSWER 7 OF 10 HCAPLUS COPYRIGHT 2002 ACS
 AN 1997:253587 HCAPLUS
 DN 126:245619
 TI Formation of multilayer circuit by using silsesquioxane as interlayer electric insulator precursor
 IN Yamaha, Takahisa; Inoe, Jushi
 PA Yamaha Corp, Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09036117	A2	19970207	JP 1995-201591	19950714
	JP 3149739	B2	20010326		
	US 5821162	A	19981013	US 1996-679738	19960712

PRAI JP 1995-201591 A 19950714
 AB The circuit is manufd. by a process including following successive steps;
 (1) covering the 1st elec. insulator film on a substrate by the 1st circuit layer, (2) forming a planarizing **hydrogensilsesquioxane** film on the 1st circuit layer, (3) converting the silsesquioxane to a preceramic Si oxide film by heating in an inert gas, (4) covering the preceramic by the 2nd insulating layer so that not to reflect fine bumps, which are expected to be formed in following step, (5) converting the preceramic to ceramic by heating in an oxidn. atm., and (6) forming the 2nd circuit directly or through the 3rd elec. insulator film on the ceramic SiO₂ layer.

L5 ANSWER 8 OF 10 HCAPLUS COPYRIGHT 2002 ACS
 AN 1997:253586 HCAPLUS
 DN 126:245618
 TI Formation of multilayer circuit by using silsesquioxane as interlayer electric insulator precursor
 IN Inoe, Jushi; Yamaha, Takahisa
 PA Yamaha Corp, Japan
 SO Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09036116	A2	19970207	JP 1995-201590	19950714
	JP 3070450	B2	20000731		
	US 5750403	A	19980512	US 1996-678568	19960712

PRAI JP 1995-201590 A 19950714
 AB The circuit is manufd. by a process including following successive steps;
 (1) covering the 1st elec. insulator film on a substrate by the 1st circuit layer, (2) forming a planarizing **hydrogensilsesquioxane** film on the 1st circuit layer, (3) converting the silsesquioxane to a preceramic Si oxide film by heating in an inert gas, (4) covering the

preceramic by the 2nd insulating layer, (5) converting the preceramic to ceramic by heating in an oxidn. atm., in which the 2nd insulator film prevents the preceramic from generating fine bumps, and (6) forming the 2nd circuit directly on the ceramic SiO₂ layer.

L5 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2002 ACS
 AN 1992:472640 HCAPLUS
 DN 117:72640
 TI Use of metal salts in manufacture of oligomeric hydrogensilsesquioxanes by hydrolysis/condensation reactions
 IN Agaskar, Pradyot
 PA USA
 SO U.S., 6 pp.
 CODEN: USXXAM

DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5106604	A	19920421	US 1991-668032	19910312
	WO 9216458	A1	19921001	WO 1992-US2104	19920312
	W: AU, BB, BR, CA, FI, HU, JP, KP, KR, LK, MG, MW, NO, RO, RU, SD RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, MC, NL, SE				
	AU 9216789	A1	19921021	AU 1992-16789	19920312
	US 5593727	A	19970114	US 1993-148391	19931108
PRAI	US 1991-668032		19910312		
	WO 1992-US2104		19920312		
	US 1992-871389		19920421		

AB The process comprises prep. a reaction medium having a 1st solvent phase and a 2nd solvent phase consisting of a concd. metal salt (e.g., FeCl₃) soln. in a polar org. solvent and water, adding HSiX₃ (X is a solvent-hydrolyzable group) to the 2-phase reaction medium, sepg. the 1st solvent phase from the 2nd solvent, treating the sepd. 1st solvent with a metal salt contg. CO₃²⁻ to remove byproducts, isolating a mixt. of crystals of (HSiO₃/2)₈ and (HSiO₃/2)₁₀ by slow evapn. of the 1st solvent, and washing the mixt. with a hydrocarbon solvent to isolate crystals of (HSiO₃/2)₈.

L5 ANSWER 10 OF 10 HCAPLUS COPYRIGHT 2002 ACS

AN 1970:405563 HCAPLUS
 DN 73:5563
 TI **Hydrogensilsesquioxanes**
 IN Collins, Warde Thomas; Frye, Cecil L.
 PA Dow Corning Corp.
 SO Ger. Offen., 14 pp.
 CODEN: GWXXBX

DT Patent
 LA German
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 1955511	B2	19730201	DE 1969-1955511	19691104
	DE 1955511	C3	19730830		
	US 3615272	A	19711026	US 1968-773314	19681104
	GB 1245483	A	19710908	GB 1969-1245483	19691006
	FR 2022525	A5	19700731	FR 1969-37744	19691103

PRAI US 1968-773314 19681104

AB Mixts. of the title compds. (HSiO₃/2)_n (I) were prep'd. from HSiCl₃ or HSi(OMe)₃. Thus, 12.7 g HSiCl₃ in 150 ml C₆H₆ was added to 200 g C₆H₆,

08/06/2002

Serial No.: 09/328,646

80.3 g concd. H₂SO₄ and 60.4 g fuming sulfuric acid (15% SO₃) within 6 hr, the acid phase removed, and the C₆H₆ phase washed to neutrality with 50% H₂SO₄ and finally with H₂O. The soln. was filtered and C₆H₆ evapd. to give 97.8% resinlike I contg. 9-27% volatile I (n = 10) 4.2, I (n = 12) 43.2 I (n = 14) 36.8, and I (n = 16) 13.5 wt. %.

L2 ANSWER 1 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 2002:231223 HCAPLUS
DN 136:333639
TI Structural, electrical, and mechanical properties development during curing of low-k hydrogen silsesquioxane films
AU Toivola, Yvete; Thurn, Jeremy; Cook, Robert F.
CS Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, 55455, USA
SO Journal of the Electrochemical Society (2002), 149(3), F9-F17
CODEN: JESOAN; ISSN: 0013-4651
PB Electrochemical Society
DT Journal
LA English
AB Changes in structure and properties of a com. low dielec. const. (low-k) silsesquioxane (SSQ) material are examd. as a function of curing temp. (375-450.degree.C). Curing results in a chem. reaction in which cage-like ($\text{HSiO}_1.5$) SSQ oligomers network via -O-Si-O- linkages. A direct consequence of the chem. and structural evolution is a change in elec. and mech. properties. A correlation is made between chem. and structural changes on curing (quantified by IR spectroscopy) and the resulting dielec. const., film stress, hardness, and modulus. In particular, IR spectroscopy was used to quantify the increased -O-Si-O- oligomer network formed as a result of increased curing temp. Film modulus and hardness, detd. by depth-sensing indentation, were shown to increase as a result of increased networking. Residual film stress, detd. by a curvature measurement technique, was detd. to be tensile with increased magnitude on increased network formation. Film dielec. const. detd. by capacitance measurements of metal dot structures increased as a result of increased network formation. Capping SSQ films with thin layers of SiNx was shown to greatly improve resistance to stress-corrosion cracking for all levels of network formation.

RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 2 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:641431 HCAPLUS
TI Synthesis of mixed layers derived from functional silicon oxide clusters on gold
AU Nicholson, Kenneth T.; Zhang, K. Z.; Banaszak Holl, Mark M.; McFeely, F. R.; Pernisz, Udo C.
CS Department of Chemistry, University of Michigan, Ann Arbor, MI, 48109, USA
SO Abstracts of Papers, 222nd ACS National Meeting, Chicago, IL, United States, August 26-30, 2001 (2001), PHYS-334 Publisher: American Chemical Society, Washington, D. C.
CODEN: 69BUZP
DT Conference; Meeting Abstract
LA English
AB The synthesis of single and multiphase mixed layers of silicon oxide clusters ($\text{HSiO}_1.5$)_n on freshly evapd. gold surfaces is reported within this paper. The dynamic nature of an assembled H₈Si₈O₁₂ cluster layer in the presence of other adsorbates in ultra-high vacuum is the major player in the displacement and exchange reactions which yield mixed layers contg. organosilicon entities with several potential functionalities. The role of at. hydrogen, a byproduct of the cluster chemisorption, in the formation of these novel mixed layers will also be discussed.

L2 ANSWER 3 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 2001:640133 HCAPLUS
 TI Scanning tunneling microscopy and spectroscopy study of a model Si/SiO₂
 interface: Spherosiloxane clusters on Si(100)
 AU Schneider, Kevin S.; Orr, Brad G.; Banaszak Holl, Mark M.
 CS Department of Chemistry, University of Michigan, Ann Arbor, MI,
 48109-1055, USA
 SO Abstracts of Papers, 222nd ACS National Meeting, Chicago, IL, United
 States, August 26-30, 2001 (2001), MTLS-001 Publisher: American Chemical
 Society, Washington, D. C.
 CODEN: 69BUZP
 DT Conference; Meeting Abstract
 LA English
 AB Scanning tunneling microscopy (STM) and spectroscopy data for a model
 Si/SiO₂ interface system comprised of spherosiloxane clusters ([
 HSiO_{1.5}]_n) chemisorbed to Si(100) will be presented.
 Information obtained from these expts. may yield a better understanding of
 the chem., phys., and elec. phenomena occurring in device Si/SiO₂
 interfaces. Previous studies have produced two bonding models for the
 H₈Si₈O₁₂/Si(100) model oxide interfacial system: the "monovertex" and
 "cracked cluster" bonding configurations. Non-local d. functional theory
 (NL-DFT) was used to derive electron d./electrostatic potential maps for
 the H₈-Si₈O₁₂ monovertex and cracked cluster bonding configurations (Fig.
 1A&B). STM data of the H₈Si₈O₁₂/Si(100) surface (Fig. 1C) is entirely
 consistent with the geometrical constraints imposed from NL-DFT calcns.
 for the monovertex attachment model. Similar expts. for the
 H₁₀Si₁₀O₁₅/Si(100) system will also be presented. An expected STM filled
 state image of a monovertex-attached H₁₀Si₁₀O₁₅ cluster to Si(100) is
 shown in Fig. 2.

L2 ANSWER 4 OF 38 HCAPLUS COPYRIGHT 2002 ACS
 AN 2000:401495 HCAPLUS
 DN 133:44331
 TI Preparation of hydrogen silsesquioxane resins and modified hydrogen
 silsesquioxane resins in high yield without using strong acids
 IN Carpenter, Leslie Earl, II; Suto, Michitaka; Zank, Gregg Alan
 PA Dow Corning Asia, Ltd., Japan
 SO Eur. Pat. Appl., 7 pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 1008609	A2	20000614	EP 1999-124291	19991206
	A3	20010314		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2000169585	A2	20000620	JP 1998-347354	19981207
KR 2000047964	A	20000725	KR 1999-55440	19991207
PRAI JP 1998-347354	A	19981207		
AB Hydrogen silsesquioxane with sol. in solvents without gelling, is prep'd. by hydrolysis and condensation of trichlorosilane (HSiCl ₃) in a two-phase system comprising water and .gtoreq.1 oxygen-contg. org. solvent selected from ketones, ethers, and esters. The silanol resin obtained is capped with R ₃ SiO _{0.5} (R = Me, vinyl, H; e.g., Me ₃ SiCl), to form a modified hydrogen silsesquioxane resin (HSiO _{1.5}) _x (R ₃ SiO _{0.5}) _{1-x} with chem. stability.				

L2 ANSWER 5 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1998:709120 HCAPLUS
 DN 129:331201
 TI Stable solutions of siloxane polymers for coating semiconductor materials
 IN Leung, Roger Y.; Nakano, Tadashi
 PA AlliedSignal Inc., USA
 SO PCT Int. Appl., 36 pp.
 CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9847943	A1	19981029	WO 1998-US6165	19980330
	W: CA, CN, IL, JP, KR, RU, SG				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	US 6015457	A	20000118	US 1998-39289	19980312
	TW 419493	B	20010121	TW 1998-87105463	19980410

PRAI US 1997-44478P P 19970421
 US 1998-39289 A 19980312

AB Poly(hydrido siloxane) copolymers and solns. of these copolymers are prep'd. for coating semiconductor substrates as planarizing dielec. layers. The copolymers $(HSiO1.5)_a(HSiO(OR))_b(SiO_2)_c$, where R = a mixt. of H and C1-4-alkyl; $a + b + c = 1$; $0.5 < a < 0.99$; $0.01 < b < 0.5$; and $0 < c < 0.5$ are prep'd. from alkoxy silanes. Thus, hydrolytic polymn. of triethoxysilane in Me₂CO/HNO₃/H₂O gave a copolymer of mol. wt. 20,000. Thus, copolymer was mixed/heated with 2,2-dimethoxypropane and Bu₂O to remove H₂O and alc. and the stable (>9 mo. at -15.degree.) soln. was spin coated onto silicon wafers.

L2 ANSWER 6 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1998:505736 HCAPLUS

DN 129:217206

TI Highly Porous Polyhedral Silsesquioxane Polymers. Synthesis and Characterization

AU Zhang, Chunxin; Babonneau, Florence; Bonhomme, Christian; Laine, Richard M.; Soles, Christopher L.; Hristov, Hristo A.; Yee, Albert F.

CS Departments of Chemistry Materials Science and Engineering and the Macromolecular Science and Engineering Center, University of Michigan, Ann Arbor, MI, 48109, USA

SO Journal of the American Chemical Society (1998), 120(33), 8380-8391

CODEN: JACSAT; ISSN: 0002-7863

PB American Chemical Society

DT Journal

LA English

AB Polyhedral octahydridosilsesquioxanes, $[HSiO1.5]_8$ (1) and $[(HSiMe_2O)SiO1.5]_8$ (3) were hydrosilylatively copolymd. with stoichiometric amts. of the octavinylsilsesquioxanes, $[vinylSiO1.5]_8$ (2) and $[(vinylSiMe_2O)SiO1.5]_8$ (4) in toluene using platinum divinyltetramethyldisiloxane, "Pt(dvs)", as catalyst. The degree of condensation of the resultant four copolymers ranges from 43% to 81% depending on intercube chain lengths, as detd. by solid state ¹³C and ²⁹Si MAS NMR analyses, using cross-polarization (CP) techniques. The presence of residual functional groups was confirmed by diffuse reflectance IR Fourier transform spectroscopy (DRIFTS). Polymer porosities were measured using nitrogen sorption, positron annihilation lifetime spectroscopy (PALS), and small angle X-ray scattering (SAXS) methods. The combination of these three techniques allows a relatively complete description of the pore sizes and pore size distributions in these materials. The pores in the cube interiors are .apprx.0.3 nm in diam., while those between the

cubes range from 1 to 50 nm in diam. (for polymer 3 + 4). Nitrogen sorption analyses give sp. surface areas (SSAs) of 380 to 530 m²/g with "observable" pore vols. of 0.19-0.25 mL/g.

L2 ANSWER 7 OF 38 HCAPLUS COPYRIGHT 2002 ACS
 AN 1998:442283 HCAPLUS
 DN 129:169762
 TI In situ high-pressure- and high-temperature studies of silicon suboxides via energy-dispersive x-ray diffraction
 AU Friede, B.; Jansen, M.
 CS Institut Anorganische Chemie, Universitaet Bonn, Bonn, D-53121, Germany
 SO Zeitschrift fuer Anorganische und Allgemeine Chemie (1998), 624(7), 1159-1165
 CODEN: ZAACAB; ISSN: 0044-2313
 PB Johann Ambrosius Barth
 DT Journal
 LA German
 AB The amorphous Si compds. Si₂O₃, H₂Si₂O₄, **H₂SiO_{1.5}**, and SiO were investigated under high-pressure- and high-temp. conditions in situ via energy-dispersive x-ray diffraction with synchrotron radiation. Except for SiO, at a pre-set pressure of 45 kbars the formation of coesite was obsd. at heating. Com. available SiO did not crystallize in any way, indicating that it seems not to consist of Si(II) oxide, but is in fact a mixt. of Si and SiO₂, disproportionated on an at. scale.

L2 ANSWER 8 OF 38 HCAPLUS COPYRIGHT 2002 ACS
 AN 1998:293555 HCAPLUS
 DN 129:17111
 TI Stable solutions of silsesquioxane or siloxane resins and silicone solvents
 IN Hacker, Nigel P.; Krajewski, Todd; Lefferts, Scott; Davis, Gary
 PA Alliedsignal Inc., USA
 SO PCT Int. Appl., 31 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9818850	A1	19980507	WO 1997-US19299	19971027
	W:	AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GE, GH, HU, ID, IL, IS, JP, KP, KR, LK, LR, LS, LT, LV, MG, MK, MN, MW, MX, NZ, PL, RO, RU, SD, SG, SI, SK, SL, TR, TT, UA, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG			
	US 6020410	A	20000201	US 1997-955802	19971022
	AU 9850872	A1	19980522	AU 1998-50872	19971027
	EP 935632	A1	19990818	EP 1997-913759	19971027
	EP 935632	B1	20011212		
	R:	DE, FR, GB, IE			
	JP 2002514238	T2	20020514	JP 1998-520630	19971027
	TW 428016	B	20010401	TW 1997-86116080	19971029
	KR 2000052937	A	20000825	KR 1999-703809	19990429
PRAI	US 1996-29235P	P	19961029		
	US 1997-955802	A	19971022		
	WO 1997-US19299	W	19971027		
AB	Storage-stable solns. of silsesquioxanes or siloxanes, for coatings of,				

e.g., semiconductors, are obtained by means of a silicon-contg. solvent compn. The soln. has .gtoreq.1 polymer having a formula $[(\text{HSiO1.5})x(\text{Oy})_n, (\text{HSiO1.5})_n, (\text{HSiO1.5})x(\text{RSiO1.5})z]_n$, $[(\text{HSiO1.5})x(\text{RSiO1.5})y]_n$ or $[(\text{HSiO1.5})x(\text{Oy})(\text{RSiO1.5})z]_n$ wherein $x = 6-20$, $y = 1-3$, $z = 6-20$, $n = 1-4,000$, and each R is independently H, C1-8 alkyl or C6-12 aryl. The solvent has the formula $(\text{CH}_3)_3\text{SiO}[\text{Si}(\text{CH}_3)_2]_a\text{-Si}(\text{CH}_3)_3$, $(\text{CH}_3\text{CH}_2)\text{SiO}[\text{Si}(\text{CH}_3\text{CH}_2)_2]_a\text{-Si}(\text{CH}_3\text{CH}_2)_3$, $\text{R}_3\text{SiO}[\text{SiR}'_2]_a\text{-SiR}_3$, $[\text{OSi}(\text{CH}_3)_2]_b$, $[\text{OSi}(\text{CH}_3\text{CH}_2)_2]_b$ or $[\text{OSiR}'_2]_n$ wherein $a = 0-5$, $b = 3-5$, and each R' is independently H or C1-8 alkyl.

L2 ANSWER 9 OF 38 HCAPLUS COPYRIGHT 2002 ACS
 AN 1998:288782 HCAPLUS
 DN 129:86705
 TI Thin-film materials and minimum thermal conductivity
 AU Lee, S. -M.; Matamis, George; Cahill, David G.
 CS Department of Materials Science and Engineering, University of Illinois, Urbana, IL, 61801, USA
 SO Microscale Thermophysical Engineering (1998), 2(1), 31-36
 CODEN: MTENFP; ISSN: 1089-3954
 PB Taylor & Francis
 DT Journal
 LA English
 AB The theor. min. thermal cond. can be used to model heat transport in a wide variety of bulk and thin-film materials with strong at.-scale disorder. To explore the possibility of using metastable microstructures in thin-film materials to achieve significant redns. in cond., the authors present exptl. results-obtained using the 3.omega. method in the temp. range 77-400 K-on two novel systems. (1) The thermal cond. of a low-dielec.-const. "flowable oxide" (HSiO1.5 , hydrogen silsesquioxane) is greatly reduced relative to SiO_2 . (2) The thermal cond. of stabilized zirconia/ SiO_2 multilayers is unchanged by solid-solid interfaces sepd. by nanometer length scales.

L2 ANSWER 10 OF 38 HCAPLUS COPYRIGHT 2002 ACS
 AN 1996:522988 HCAPLUS
 DN 125:247889
 TI The monophenylhydrosilasesquioxanes $\text{PhHn-1Si}(\text{O1.5})_n$ where $n = 8$ or 10
 AU Calzaferri, Gion; Marcolli, Claudia; Imhof, Roman; Toernroos, Karl W.
 CS Inst. of Inorganic and Physical Chemistry, Univ. of Berne, Bern, 3000, Switz.
 SO Journal of the Chemical Society, Dalton Transactions: Inorganic Chemistry (1996), (15), 3313-3322
 CODEN: JCDTBI; ISSN: 0300-9246
 PB Royal Society of Chemistry
 DT Journal
 LA English
 AB The 1st monosubstituted decasilasesquioxane, $\text{PhH}_9\text{Si}(\text{O1.5})_{10}$, and the analogous $\text{PhH}_7\text{Si}(\text{O1.5})_8$ mol. were prep'd. and characterized by IR and Raman spectroscopy and x-ray crystallog. Both have crystallog. C1 symmetry, but their cages exhibit an approx. Cs, and an effective C3, symmetry, resp. in the cryst. state. The IR and Raman spectra of the two mols. are very similar and reflect the close similarity obsd. for the spectra of $\text{H}_8\text{Si}(\text{O1.5})_8$ and $\text{H}_{10}\text{Si}(\text{O1.5})_{10}$. They were treated as a superposition of the spectra of the siloxane cage $\text{Hn-1Si}(\text{O1.5})_n$, $n = 8$ or 10, the Ph substituent and the connecting moiety $\text{O}_3\text{Si-C(CH}_3)_2$ and assigned from spectral correlation and normal coordinate anal. The siloxane cage vibrations are best understood by correlation with those of the unsubstituted cages, indicating that distortions of the $\text{Si}(\text{O1.5})_8$ and $\text{Si}(\text{O1.5})_{10}$ cages caused by the substituent are

small. A comparison of the Si-C stretching force consts. indicates that Si-Cvinyl and Si-Cphenyl are of similar strength while the Si-Calkyl bond is weaker. The notion of ring-opening vibrations, introduced for ($\text{HSiO}1.5)2n$, n = 2, 3, 4, etc., is also applicable to $\text{PhH}_7\text{Si}_8\text{O}_{12}$ and $\text{PhH}_9\text{Si}_{10}\text{O}_{15}$. The Ph substituent does not influence the frequency range of four- and five-membered ring-opening vibrations, however the no. of such vibrations is increased.

L2 ANSWER 11 OF 38 HCPLUS COPYRIGHT 2002 ACS
 AN 1996:452231 HCPLUS
 DN 125:144052
 TI Silsesquioxanes as Synthetic Platforms. 3. Photocurable, Liquid Epoxides as Inorganic/Organic Hybrid Precursors
 AU Sellinger, Alan; Laine, Richard M.
 CS Department of Materials Science and Engineering Chemistry, University of Michigan, Ann Arbor, MI, 48109-2136, USA
 SO Chemistry of Materials (1996), 8(8), 1592-1593
 CODEN: CMATEX; ISSN: 0897-4756
 PB American Chemical Society
 DT Journal
 LA English
 AB Platinum catalyzed hydrosilylation of allyl glycidyl ether with octahydridosilsesquioxane ($\text{HSiO}_1.5\text{)}_8$ and octakis(dimethylsiloxy)silsesquioxane ($\text{HMe}_2\text{SiOSiO}_0.5\text{)}_8$ provides access to tetra- and octaepoxy-functionalized cubic silsesquioxanes (cubes). The resulting epoxy cubes offer "masked" silica contents of up to 65 wt.%, are sol. in common solvents, and are viscous liqs. at room temp. and making them attractive for coating and nanocomposite applications. They polymerize on exposure to UV light in the presence of a catalytic photoinitiator to produce insol., hybrid nanocomposites. The epoxy cubes were characterized by NMR (1H, 13C, 29Si), TGA, FTIR, and SEC.

L2 ANSWER 12 OF 38 HCPLUS COPYRIGHT 2002 ACS
 AN 1996:350596 HCPLUS
 DN 125:60085
 TI Modified hydrogen silsesquioxane resins as precursor for manufacture of ceramics
 IN Zank, Gregg A.
 PA Dow Corning Corp., USA
 SO U.S., 5 pp.
 CODEN: USXXAM
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5516867	A	19960514	US 1995-439843	19950512
	CA 2175415	AA	19961113	CA 1996-2175415	19960430
	EP 742245	A2	19961113	EP 1996-303144	19960503
	EP 742245	A3	19970827		
	R: DE, FR, GB				
	JP 08302019	A2	19961119	JP 1996-116792	19960510
PRAI	US 1995-439843		19950512		
AB	Novel modified hydrogen silsesquioxane resins, of structure ($\text{HSiO}_1.5\text{)}_x(\text{R}_1\text{R}_2\text{R}_3\text{SiO}_0.5\text{)}_y$ (R_1 , R_2 , and R_3 are independently selected from H, alkyl, and aryl; $x = 0.25-0.99$; $0.01 < y < 0.75$; and $x + y = 1.0$) were disclosed. The resins are prep'd. by refluxing a mixt. of 1 wt. part of the precursor resin, of structure $\text{HSi(OH)}_x(\text{X})_y\text{Oz}/2$ (X is a hydrolyzable substituent, $x = 0-2$; $0 < y < 2$; $z = 1-3$; $x + y + z = 3$), with 0.01-0.5 wt. parts water, 0.0001-0.05 wt. parts of an acid (esp. trifluoroacetic acid), and 0.1-10 wt. parts of an end-capping agent of structure $(\text{R}_1\text{R}_2\text{R}_3\text{Si})_2\text{O}$ (R_1 , R_2 , R_3 are H, alkyl, alkenyl, or aryl). Suitable X is Cl or alkoxy; suitable R_1 , R_2 , and R_3 are H or Me; preferably, the end-capping reagent are hexamethyldisiloxane and 1,1,3,3-tetramethyldisiloxane. The modified resins, which are typically prep'd. by				

refluxing the components at 20-150.degree. for 1-24 h in an org. solvent, have a no.-av. mol. wt. of 500-2500, and are suitable for manuf. of ceramics.

L2 ANSWER 13 OF 38 HCPLUS COPYRIGHT 2002 ACS
 AN 1996:236207 HCPLUS
 DN 124:329335
 TI Highly porous interlayer dielectric for interconnect capacitance reduction
 AU Jeng, Shin-Puu; Taylor, Kelly; Seha, Tom; Chang, Mi-Chang; Fattaruso, John; Hayemann, Robert H.
 CS Semiconductor Process and Device Center, Texas Instruments, Inc., Dallas, TX, 75265, USA
 SO Symp. VLSI Technol., Dig. Tech. Pap., 15th (1995), 61-2 Publisher: Business Center for Academic Societies Japan, Tokyo, Japan.
 CODEN: 62PWAR
 DT Conference
 LA English
 AB Hydrogen silsesquioxanes ($(HSiO1.5)2n$, n = 3-8) provide a low-d. gap fill between metals which reduces interconnect capacitance. They simplify the process integration of low dielec. materials using std. spin-on coating processes. It also greatly reduces the capacitative coupling between metal leads.

L2 ANSWER 14 OF 38 HCPLUS COPYRIGHT 2002 ACS
 AN 1996:113814 HCPLUS
 DN 124:177575
 TI Silsesquioxanes as Synthetic Platforms. Thermally Curable and Photocurable Inorganic/Organic Hybrids
 AU Sellinger, Alan; Laine, Richard M.
 CS Department of Materials Science and Engineering, University of Michigan, Ann Arbor, MI, 48109-2136, USA
 SO Macromolecules (1996), 29(6), 2327-30
 CODEN: MAMOBX; ISSN: 0024-9297
 DT Journal
 LA English
 AB Novel inorg./org. hybrids based on silsesquioxanes, $(RSiO1.5)8$ and propargyl methacrylate have been synthesized and characterized. The Pt catalyzed reaction of $(HSiO1.5)8$ and $(H(CH3)2SiOSiO1.5)8$ with $HC.tplbond.CCH2OCOC(CH3)=CH2$ occurs specifically at the propargyl site, retaining the methacrylate functionality for subsequent polymn. These single-phase hybrids are sol. in common solvents e.g.: THF, toluene, hexane and $CH2Cl2$. Polymn. of the methacrylate hybrids can be realized thermally and photochem. to give hard, abrasion resistant, insol. composites contg. up to 65 wt. % masked silica. The hybrids were characterized by TGA, DSC, SEC and NMR (1H, 13C and 29Si).

L2 ANSWER 15 OF 38 HCPLUS COPYRIGHT 2002 ACS
 AN 1996:6652 HCPLUS
 DN 124:88604
 TI Silsesquioxanes as synthetic platforms: thermally and photo curable inorganic/organic hybrids
 AU Sellinger, Alan; Zhang, Chunxin; Laine, Richard M.
 CS Departments of Materials Science and Engineering, University of Michigan, Ann Arbor, MI, 48109-2136, USA
 SO Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.) (1995), Volume Date 1995, 36(2), 282-3
 CODEN: ACPPAY; ISSN: 0032-3934
 DT Journal
 LA English

AB Novel functionalized polyhedral silsesquioxane cubes contg. both methacrylate and epoxy groups were prep'd. and characterized. The syntheses are based on the Pt-catalyzed hydrosilylation of allyl glycidyl ether, propargyl methacrylate, and propargyl acetate with (**HSiO1.5**)₈, and the epoxidn. of (CH₂:CHMe₂SiOSiO1.5)₈ with 3-chloroperoxybenzoic acid. The reactions are high yield (>85%) and form relatively pure products as detd. by H, C-13, and Si-29 NMR, TGA, and SEC. The products may be thermally, chem., or photochem. cured to give hard, abrasion, and solvent-resistant materials contg. up to 70% masked silica.

L2 ANSWER 16 OF 38 HCAPLUS COPYRIGHT 2002 ACS
 AN 1995:925666 HCAPLUS
 TI Silesquioxanes as synthetic platforms: Thermally and photo curable inorganic/organic hybrids
 AU Sellinger, Alan; Zhang, Chunxin; Laine, Richard M.
 CS Macromolecular Science and Engineering Center, University Michigan, Ann Arbor, MI, 48109-2136, USA
 SO Book of Abstracts, 210th ACS National Meeting, Chicago, IL, August 20-24 (1995), Issue Pt. 2, POLY-114 Publisher: American Chemical Society, Washington, D. C.
 CODEN: 61XGAC
 DT Conference; Meeting Abstract
 LA English
 AB Novel functionalized silsesquioxanes contg. both methacrylate and epoxy groups have been synthesized and characterized. The syntheses are based on the Pt catalyzed hydrosilylation of allylglycidylether, propargylmethacrylate, and propargylacetate with (**HSiO1.5**)₈ and (HSiMe₂OSiO1.5)₈, and the epoxidn. of (CH₂=CHSiMe₂OSiO1.5)₈. The reactions are high yield (>85%), and form relatively pure products as detd. by 1H, 13C, 29Si NMR, TGA and SEC. The products may be thermally, chem., or photochem. cured to give hard, abrasion, and solvent resistant materials contg. up to 70% masked silica.

L2 ANSWER 17 OF 38 HCAPLUS COPYRIGHT 2002 ACS
 AN 1995:695730 HCAPLUS
 DN 123:286789
 TI Coupling of allyloxy and propargyloxy moieties with hydridosilanes: novel liquid crystalline functionalized silsesquioxanes
 AU Sellinger, Alan; Laine, Richard M.
 CS Department Materials Science Engineering, University Michigan, Ann Arbor, MI, 48109-2136, USA
 SO Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.) (1994), 35(2), 665-6
 CODEN: ACPPAY; ISSN: 0032-3934
 DT Journal
 LA English
 AB The synthesis and characterization of novel liq. cryst. and methacrylate-functionalized silsesquioxanes (**HSiO1.5**)₈ prep'd. by Pt-catalyzed coupling of 4 equiv. of 4-(4-allyloxybenzoyloxy)biphenyl or propargyl methacrylate with 1 equiv. octahydridosilsesquioxane. The low polymn. temp. for the methacrylate-functionalized silsesquioxane shows very promising utility for use in dental materials and abrasion-resistant coatings.

L2 ANSWER 18 OF 38 HCAPLUS COPYRIGHT 2002 ACS
 AN 1995:313765 HCAPLUS
 DN 122:87281
 TI X-ray diffraction study on medium-range structure and thermal change of silica gel made from triethoxysilane by sol-gel method
 AU Kamiya, Kanichi; Wada, Masanori; Izumi, Masao; Matsuoka, Jun; Nasu,

Hiroyuki

CS Faculty Engineering, Mie Univ., Mie-ken, 514, Japan
SO Bull. Inst. Chem. Res., Kyoto Univ. (1994), 72(2), 105-23
CODEN: BICRAS; ISSN: 0023-6071

DT Journal

LA English

AB Silica gel was prep'd. from triethoxysilane, HSi(OC₂H₅)₃ (HTES), by the sol-gel method. The medium-range (MR) structure was examd. on the basis of the X-ray radial distribution anal. A structure model deduced from hydrosilsesquioxane ladder polymer, (HSiO_{1.5})_n, which is composed of 4-fold siloxane rings (or tetra-cyclosiloxane), well-simulated MR structure of the HTES-derived silica gel. Thermal structure change of the gel in air was traced by the IR spectrometry and X-ray diffraction anal. Above 300.degree.C, .tplbond.Si-H was oxidized to form .tplbond.Si-OH, followed by the condensation between .tplbond.Si-OH to form .tplbond.Si-O-Si.tplbond. bonds. At 300-500.degree.C, the change of MR structure such as probably the reconstructive change of 4-fold siloxane rings to 6-fold ones, which was not so abrupt as the tetraethoxysilane (TEOS)-derived silica gel, was obsd. The MR structure very similar to silica glass was not yet attained even at 1000.degree.C, while it was attained around 600.degree.C in the case of the TEOS-derived silica gel.

L2 ANSWER 19 OF 38 HCPLUS COPYRIGHT 2002 ACS

AN 1994:639001 HCPLUS

DN 121:239001

TI A Quantum Mechanical Investigation of Silsesquioxane Cages

AU Earley, Clarke W.

CS Department of Chemistry, University of Missouri, Kansas City, MO, 64110, USA

SO J. Phys. Chem. (1994), 98(35), 8693-8

CODEN: JPCHAX; ISSN: 0022-3654

DT Journal

LA English

AB Electronic structure calcns. were performed on a series of mol. silsesquioxane cages [HSiO_{1.5}]_n (n = 4, 6, 8,10, and 12) using ab initio quantum mech. methods to examine factors that det. the relatively stability of different sizes of silicon oxide cages. While previous ab initio studies were reported on the relative stability of mol. silicate rings, silsesquioxane cages are expected to be better models for solid-state silicates due to their rigidity and more similar mol. environment. To det. the relative stability of silicate cages, calcd. total energies at optimized geometries (6-31G(d)//6-31G(d)) for a series of silsesquioxane cages were compared. Consistent with both exptl. observations and prior theor. investigations, mols. contg. (Si-O)₃ rings were calcd. to be significantly less stable than mols. contg. only larger rings. Much smaller differences in relative stability were calcd. to occur between larger cages that do not contain this type of ring.

L2 ANSWER 20 OF 38 HCPLUS COPYRIGHT 2002 ACS

AN 1992:638627 HCPLUS

DN 117:238627

TI Characterization of silicon sesquioxide and thermal behavior of hydrosilsesquioxane gels

AU Belot, Valerie; Corriu, Robert; Leclercq, Dominique; Lefevre, Patricia; Mutin, P. Hubert; Vioux, Andre; Flanck, Anne Marie

CS Rhone-Poulenc, Montpellier, 34059, Fr.

SO Chem. Process. Adv. Mater. (1992), 143-58. Editor(s): Hench, Larry L.; West, Jon K. Publisher: Wiley, New York, N. Y.

CODEN: 58HBAN

DT Conference

LA English

AB The thermal evolution of **HSiO1.5** gels under Ar was studied by TGA/mass spectrometry, x-ray absorption near edge structure, NMR, ESR, and comparison of heat-treated **HSiO1.5** with an authentic Si₂O₃ sample obtained by hydrolysis of Si₂Cl₆.

L2 ANSWER 21 OF 38 HCPLUS COPYRIGHT 2002 ACS

AN 1992:451145 HCPLUS

DN 117:51145

TI Size composition for paper

IN Makievskaya, S. I.; Gorskii, G. M.; Gushchina, N. V.; Shkol'nik, O. V.; Zverev, V. V.

PA Belorussian Technological Institute, USSR; State Scientific-Research Institute of Chemistry and Technology of Heteroorganic Compounds

SO U.S.S.R.

From: Otkrytiya, Izobret. 1991, (29), 127.

CODEN: URXXAF

DT Patent

LA Russian

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI SU 1668516 A1 19910807 SU 1989-4705605 19890615

AB A size compn., conferring increased stability on paper after treatment and drying, comprises the siloxanes [(**HSiO1.5**)
(HMeSiO)₁₀(Me₂SiO)₁₀(Me₃SiO_{0.5})₂]₂ 0.5-2.5 wt.% and H₂O 97.5-99.5 wt.%.

L2 ANSWER 22 OF 38 HCPLUS COPYRIGHT 2002 ACS

AN 1991:74182 HCPLUS

DN 114:74182

TI Thermal reactivity of hydrogenosilsesquioxane gels

AU Belot, V.; Corriu, R.; Leclercq, D.; Mutin, P. H.; Vioux, A.

CS Univ. Montpellier II, Montpellier, F34095, Fr.

SO Chem. Mater. (1991), 3(1), 127-31

CODEN: CMATEX; ISSN: 0897-4756

DT Journal

LA English

AB The thermal reactivity under Ar, air, and NH₃ of the hydrogenosilsesquioxane gels (**HSiO1.5**), prep'd. from trichloro- or trialkoxysilane, was investigated by using a thermogravimetric analyzer interfaced with a mass spectrometer. Under Ar these gels thermally decomp. by 2 different mechanisms: (1) the cleavage of Si-H bonds gives rise to a loss of H; (2) a redistribution reaction of Si-H and Si-O bonds induces the escape of SiH₄. This second reaction, possibly catalyzed by residual hydroxyl groups, involves the formation of SiH₂ groups as evidenced by IR and solid-state NMR spectroscopies. It accounts for the thermograms obtained under air and NH₃.

L2 ANSWER 23 OF 38 HCPLUS COPYRIGHT 2002 ACS

AN 1990:576936 HCPLUS

DN 113:176936

TI Redistribution reactions in silsesquioxane gels

AU Belot, V.; Corriu, R. J. P.; Leclercq, D.; Mutin, P. H.; Vioux, A.

CS Univ. Sci. Tech. Languedoc, Montpellier, 34060, Fr.

SO J. Mater. Sci. Lett. (1990), 9(9), 1052-4

CODEN: JMSLD5; ISSN: 0261-8028

DT Journal

LA English
 AB Thermal redistribution of Si-H and Si-O bonds or Si-C and Si-O bonds in the solid state in **HSiO1.5** and **MeSiO1.5** gels were examd. The gels were prep'd. by hydrolysis of the corresponding chlorosilanes in di-Et ether with an excess of water, then washed and dried upon vacuum at 150.degree. for 24 h. The thermal behavior of the gels was followed by TG (Netzsch STA409) and a quadrupole mass spectrometer (Kenos KSM200) which enables qual. continuous anal. of the evolved gases. Gels were heated at 5 or 10.degree./min under flowing Ar (50 mL/min). NMR spectra were recorded with a Brucker AM30 FTNMR spectrometer at 59.6 MHz resonance frequency for Si-29. Magic-angle spinning was used (.apprx.4.1 kHz spinning frequency) combined with a cross-polarization pulse sequence (5 ms contact time under Hartmann-Hahn conditions and 60 s repetition time).

L2 ANSWER 24 OF 38 HCPLUS COPYRIGHT 2002 ACS
 AN 1989:214551 HCPLUS
 DN 110:214551
 TI Injection-molded silicone rubber compositions with low compression set
 IN Okami, Takehide; Fujiki, Hironao; Hasebe, Nobuyuki
 PA Shin-Etsu Chemical Industry Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 63202659	A2	19880822	JP 1987-34907	19870218
JP 05000417	B4	19930105		

 AB The compns., useful for moldings with low compression set without post curing, comprise 100 parts vinyl group-contg. siloxanes (A), 0-300 parts fillers, catalytic amts. of Pt compds., and HR₂SiO_{0.5}-terminated hydrogen siloxanes (R = Me, Et, Pr) having 0.6-3.0 Si-bonded H (based on vinyl groups of A) and no **HSiO1.5** units. A compn. of dimethylvinylsilyl-terminated polydimethylvinylsiloxane 100, methylsiloxane-treated silica 30, and cyclic methylhydrogen polysiloxane 1.36 parts and 5 ppm H₂PtCl₆ was kneaded and injection-molded at 170.degree. for 60 s to give a product showing compression set 9.2%.

L2 ANSWER 25 OF 38 HCPLUS COPYRIGHT 2002 ACS
 AN 1988:168547 HCPLUS
 DN 108:168547
 TI Process for manufacture of siloxane resins having 0.1-30% monovalent units having Si-H groups
 IN Butler, Derek William
 PA Dow Corning Ltd., UK
 SO Eur. Pat. Appl., 11 pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 251435	A1	19880107	EP 1987-303458	19870421
EP 251435	B1	19900912		
R: BE, DE, FR, GB				
US 4774310	A	19880927	US 1987-61759	19870615
CA 1285095	A1	19910618	CA 1987-540535	19870625

JP 63008421	A2	19880114	JP 1987-157973	19870626
JP 05062129	B4	19930907		
PRAI GB 1986-15862		19860628		

AB A method for making siloxane resins essentially consisting of tetravalent SiO₂ units and monovalent R₃SiO_{0.5} and HaR_{3-a}SiO_{0.5} (R = C<9 alkyl, C<9 aryl; a = 1,2) units comprises reacting a siloxane resin consisting of R₃SiO_{0.5} units and SiO₂ units with (HaR_{3-a}Si)₂₀ in the presence of an acidic catalyst. Although these resins have SiH groups they differ from MQ resins [siloxane resins consisting of triorganosiloxane units (R₃SiO_{0.5}) and SiO₂ units] in that they have a significant content of divalent (HRSiO) and/or trivalent (HSiO_{1.5}) units. A MQ resin (I) was prep'd. by reacting 1-hexamethyldisiloxane 129.6, HCl 40, abs. EtOH 30, and H₂O 60 g at 70-80.degree., and adding 208.3 g Si(OEt)₄ dropwise over 60 min. The temp. was increased and maintained at 75-80.degree. for .apprx.30 min, and the product was sepd. using H₂O and PhMe. The org. phase was neutralized, dried, filtered, and the solvent removed under vacuum at 130.degree. producing 172.5 g I with mol. wt. 881, viscosity 554 mm²/s, and 1.9% residual SiOEt. A N-filled reactor was charged with 125.8 g I, 17.4 g (Me₂HSi)₂₀ was added, the mixt. was heated with stirring to 33.degree. and 0.72 g F₃CSO₃H was added with 0.07 g H₂O. The mixt. was heated to .apprx.80.degree. for 6 h, cooled to 62.degree., the acid catalyst ppt'd. by addn. of DMF, the mixt. maintained at 80.degree. for 1 h, cooled to room temp., and 10 g NaHCO₃ was added. The product was filtered, and stripped at 128.degree./10 mmHg, producing 77.9 g of resin, anal. of which showed 6.18% SiH.

L2 ANSWER 26 OF 38 HCPLUS COPYRIGHT 2002 ACS
 AN 1987:515635 HCPLUS
 DN 107:115635
 TI A new route to trimethylsilylated spherosilicates. Synthesis and structure of [Si₁₂O₁₈](OSiMe₃)₁₂, D_{3h}-[Si₁₄O₂₁](OSiMe₃)₁₄, and C_{2v}-[Si₁₄O₂₁](OSiMe₃)₁₄
 AU Agaskar, P. A.; Day, V. W.; Klemperer, W. G.
 CS Dep. Chem., Univ. Illinois, Urbana, IL, 61801, USA
 SO J. Am. Chem. Soc. (1987), 109(18), 5554-6
 CODEN: JACSAT; ISSN: 0002-7863
 DT Journal
 LA English
 OS CASREACT 107:115635
 AB Three hydridosiloxanes were isolated for the first time from a mixt. of species (HSiO_{1.5})_n prep'd. by a method previously described by Frye and Collins: [Si₁₂O₁₈]H₁₂ (I), D_{3h}-[Si₁₄O₂₁]H₁₄ (II), and C_{2v}-[Si₁₄O₂₁]H₁₄ (III). The corresponding trimethylsiloxy compds. [Si₁₂O₁₈](OSiMe₃)₁₂ (IV), D_{3h}-[Si₁₄O₂₁](OSiMe₃)₁₄ (V), and C_{2v}-[Si₁₄O₂₁](OSiMe₃)₁₄ (VI) were prep'd. by treatment of I-III with Me₃NOSiMe₃Cl. The structures of II and III were detd. using single crystal x-ray diffraction and NMR techniques. Compds. I and IV have D_{2d} polyhedral frameworks involving four four-Si siloxane rings and four five-Si siloxane rings, i.e., [44, 54] cages. Compds. II and V have polyhedral D_{3h}-[43, 56] frameworks, while III and VI have C_{2v}-[44, 54, 61] frameworks.

L2 ANSWER 27 OF 38 HCPLUS COPYRIGHT 2002 ACS
 AN 1978:121372 HCPLUS
 DN 88:121372
 TI Diorganomonochlorosilanes
 IN Takamisawa, Minoru; Hayashi, Takayoshi; Umemura, Mitsuo
 PA Shin-Etsu Chemical Industry Co., Ltd., Japan
 SO Japan., 4 pp.

CODEN: JAXXAD

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 52031854	B4	19770817	JP 1970-80642	19700914
AB	Diorganodichlorosilanes were treated with polysiloxanes having .gtoreq.30 mol% MeHSiO or HSiO1.5 unit in a mol in the presence of BC13, (Me2N)3PO, or Bu4NCl to give diorganomonosilanes. Thus, 387 g Me2SiCl2, 200 g Me3SiO(SiHMeO)10SiMe3, and 18 g (Me2N)3PO were refluxed 4 h to give 68.3% Me2SiHCl.				

L2 ANSWER 28 OF 38 HCPLUS COPYRIGHT 2002 ACS

AN 1973:125375 HCPLUS

DN 78:125375

TI Organopolysiloxanes

IN Flannigan, William Tait

PA Imperial Chemical Industries Ltd.

SO Ger. Offen., 13 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 2236971	A1	19730215	DE 1972-2236971	19720727
	GB 1384695	A	19750219	GB 1971-35971	19720614
	BE 786656	A1	19730124	BE 1972-120196	19720724
	NL 7210431	A	19730201	NL 1972-10431	19720728
	FR 2148078	A1	19730316	FR 1972-27323	19720728
	JP 48028600	A2	19730416	JP 1972-76851	19720731

PRAI GB 1971-35971 19710730

AB Organopolysiloxanes, useful in paper manuf., were prep'd. They contained R3Si00.5 and SiO2 units, where R is a univalent hydrocarbon group, and also RHSiO and (or) **HSiO1.5**. The ratio of R, R3Si00.5, and RHSiO and (or) **HSiO1.5** to SiO2 was 0.6-1.5:1, the ratio of R3Si00.5 to RHSiO and (or) **HSiO1**. 5 was 1-50:1, and OH bound to Si was .leq.1 wt. %. Thus, a mixt. of 339 parts trimethylchlorosilane (I) [75-77-4] and 24.2 parts methylidichlorosilane [75-54-7] in 250.8 parts xylene was added to a SiO2 hydrosol (prep'd. from Na silicate, water, and HCl in isopropyl alc.). A mixt. was refluxed for 2 hr at 80-5.deg., cooled to 60-70.deg., 500 parts xylene added, the phases allowed to sep., the xylene phase contg. the resin distilled to remove water, isopropyl alc., and some xylene, to give a 30% polymer soln. in xylene. I (172 parts) was added to 1000 parts of the 30% resin soln. and the mixt. was refluxed for 3 hr, cooled to 60-70.deg. distilled at 135-40.deg. to remove water and unwanted disiloxanes to give a 30% product soln. in xylene.

L2 ANSWER 29 OF 38 HCPLUS COPYRIGHT 2002 ACS

AN 1972:37004 HCPLUS

DN 76:37004

TI Concretes of increased stability containing additives of organosilicon polymers

AU Batrakov, V. G.

CS USSR

SO Beton Zhelezobeton (1971), (10), 19-22

CODEN: BTZBA2

DT Journal
 LA Russian
 AB Lab. and outdoor tests were made on the life of concrete and reinforced concrete structures in cyclic freezing, wetting, and drying, capillary suction and evapn. of salt solns. Synthesized sea water with 34 g salts/l. was used. Organosilicon liq.-like polyhydroxiloxane and Na siliconates increase the life and the freeze resistance of normally hardened concretes independent of their compn. and type of binder. This is esp. true for cast concrete made of highly mobile mixes used for filling seams in reinforced concrete parts. The highest freeze and corrosion resistance is obtained with the siloxane GKZh-94. In water-satd. concrete samples with various surfactants at +20 to -60.degree. the least relative expansion is obsd. in concretes with nonorganized structure. The effect of the siliconate GKZh-10 (0.1%) and sulfite waste liquor (0.02%) is somewhat less. Various types of cement can be obtained by adding sesquisiloxanes during grinding: hydrophobic ones by adding 0.15-0.25% sesquisiloxanes RSiO1.5 (R=Me, Et, Ph), hydrophobic-gas-evolving ones by adding 0.1% RSiO1.5HSiO1.5, and gas-evolving ones by adding 0.1% HSiO1.5. Additives of the RSiO1.5HSiO1.5 type show the best freeze resistance. The life increase of concrete is due to the formation of a fine-porous structure with rupture of the Si-H bond.

L2 ANSWER 30 OF 38 HCPLUS COPYRIGHT 2002 ACS
 AN 1969:414148 HCPLUS

DN 71:14148

TI Enhancing the repellency of fibrous materials with fluoroalkoxyalkylsilanes or siloxanes

IN Pittman, Allen G.; Wasley, William L.

PA United States Dept. of Agriculture

SO U.S., 11 pp.
 CODEN: USXXAM

DT Patent
 LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3441431	A	19690429	US 1967-641108	19670525
AB	Fluoroisopropyl allyl (or vinyl) ethers (I; X, X' = F or Cl; n = 0-1) are treated with silanes (contg. Si-H bonds) in the presence of a Pt-catalyst to yield fluoroalkoxyalkylsilanes (II; X, X' = F or Cl; R, Y = F, Cl, alkoxy group, or aryl group; m = 2-3; n = 1-2), which are useful water- and oil-repellents for cotton and wool fabrics. Thus, 15.3 g. KF dispersed in 90 ml. diglyme was cooled to -40.degree., 44 g. hexafluoroacetone was added, the mixt. was allowed to warm to room temp., 32 g. allyl bromide was added, and the mixt. was heated 10 hrs. at 80-90.degree. to yield 68% hep-tafluoroisopropyl allyl ether (III) (I; X, X' = F; n = 1), b. 61.degree.. I (X, X', n, b.p. given) similarly prep'd. were: Cl, Cl, 1, 130.degree.; F, Cl, 1, 97.degree.; F, F, 0, 29.degree.; Cl, Cl, 0, 81.degree., nD23 1.3579; and F, Cl, 0, 53-5.degree.. A mixt. of 0.06 mole III, 0.06 mole SiHC13, and 0.2 ml. 0.14M H2PtCl6.6H2O in iso-PrOH was heated in a sealed container for 6 hrs. at 90.degree. to yield 85% 3-(heptafluoroisopropoxy)propyl-trichlorosilane (IV) (II; X, X' = F; m = 3; n = 1; Y + R = Cl3), b0.5 39.degree.. Other II similarly prep'd. are tabulated. Wool and cotton fabrics, which were immersed for 10 min. in 1:1 IV-toluene soln. at 80.degree., removed, rinsed with acetone, dried, and cured for 10 min. at 150.degree., had oil repellency rating (3M test) 80 and 90, resp., and both had water repellency rating (AATC spray test) 100. Similar, but untreated, fabrics had no repellency by these				

tests. IV (20 ml.) was hydrolytically polymd. by mixing with 600 ml. H₂O with vigorous stirring for 20 min. The polymer in 50 ml. C₂C₁₃F₃ was H₂O-washed, dried, and heated for 15 hrs. at 140-50.degree. to yield a polysiloxane (VIII) that had the repeating structure [(CF₃)₂CFO(CH₂)₃SiO]_{1.5}. V, VI, and VII were similarly homopolymd. IV-SiHCl₃ copolymers (IX), with repeating structure [(CF₃)₂CFO(CH₂)₃SiO_{1.5}]_{2.4}[HSiO_{1.5}], were also prep'd. by hydrolytic copolyrn. Both VIII and IX gave good oil and water resistance to cotton and wool fabrics. V was similarly copolymd. with MeC₁₂SiH.

L2 ANSWER 31 OF 38 HCPLUS COPYRIGHT 2002 ACS
 AN 1966:98945 HCPLUS
 DN 64:98945
 OREF 64:18605e-f
 TI Investigation of the chemical properties of stain films on silicon by means of infrared spectroscopy
 AU Beckmann, K. H.
 CS Philips Zentrallaboratorium G.m.b.H., Hamburg, Germany
 SO Surface Sci. (1965), 3(4), 314-332
 DT Journal
 LA English
 AB From the study of adsorption peaks and intensity of adsorption for ir transmission spectra on stain films electrochem. produced on p-type Si in concd. HF it is concluded that these films consist chiefly of Si hydrides. The overall compn. of the film produced by immersion of Si samples in 0.1N HNO₃ in concd. HF varies between H₂SiO₃ and HSiO_{1.5}; such variation in compn. was independent of type and magnitude of the cond. of the samples.

L2 ANSWER 32 OF 38 HCPLUS COPYRIGHT 2002 ACS
 AN 1962:28898 HCPLUS
 DN 56:28898
 OREF 56:5479a-b
 TI Crystal structure of (HSiO_{1.5})₈
 AU Larsson, Kare
 SO Arkiv Kemi (1960), 16, 215-19
 DT Journal
 LA Unavailable
 AB (HSiO_{1.5})₈ is hexagonal, a 9.131 .+- .0.01 and c 15.37 .+- .0.015 A., Z = 3, space group is R.hivin.3. The structure resembles that of (MeSiO_{1.5})₈ but the mol. packing is different. The effective intermol. attraction is larger in (MeSiO_{1.5})₈ than in (HSiO_{1.5})₈.

L2 ANSWER 33 OF 38 HCPLUS COPYRIGHT 2002 ACS
 AN 1961:37655 HCPLUS
 DN 55:37655
 OREF 55:7272a-d
 TI Silicones. L. Methylsiloxanes with Si-H bonds
 AU Muller, Rich.; Kohne, R.; Sliwinski, S.
 CS Inst. silikon- und Fluorkarbonchem., Radebeul-Dresden, Germany
 SO J. prakt. Chem. (1960), 11, 336-40
 DT Journal
 LA Unavailable
 AB CA 54, 4436i, 25734a. Me siloxanes with Si-H bonds were made by cohydrolysis, cocondensation, or an equilibration process (siloxane, starting materials, b.p., m.p., d₂₀, n_{20D} and viscosity v₂₀ given): Me₃SiOSiHMe₂ (I) + Me₃SiCl₂, 85.7.degree., - , 0.758, 1.3789,

0.53; (Me₂HSiO)₄Si, Me₂HSiCl (II) + SiCl₄, 189.degree., -, 0.885, 1.3869,
 1.35; (Me₂HSiO_{0.5})₆(SiO₂)₂, II + SiCl₄, 261.degree., -, 0.9298, 1.3934, -;
 (Me₂HSiO)₃SiMe, II + MeSiCl₃, 164.degree., -155.degree., 0.8613, 1.3852,
 -; (Me₂HSiO_{0.5})₂(MeSiO_{1.5})₂, II + MeSiCl₃, 225.degree., -140.degree.,
 0.9011, 1.3908, 1.59; (Me₂HSiO)₃SiH, II + HSiCl₃, 155.degree., -, 0.8553,
 1.3813, -; (Me₂HSiO_{0.5})₄(HSiO_{1.5})₂, II + HSiCl₃,
 208.degree., -, -, 1.3867, -; (Me₂HSiO_{0.5})₂(MeHSiO), I + II, 119.degree.,
 -, 0.825, 1.3798, 0.60; (Me₂HSiO_{0.5})₂(MeHSiO)₂, I + II, 157.degree., -,
 0.867, 1.3831, 0.82; (Me₂HSiO_{0.5})₂(MeHSiO)₃, I + II, 188.degree., -,
 0.884, 1.3859, 0.93; (MeH₂Si)₂O, MeH₂SiCl (III), 34.5.degree., -, 0.7487,
 1.3590, -; (MeH₂SiO_{0.5})₂(MeHSiO), I + III, 90.degree., -, 0.8376, 1.3761,
 -; (MeH₂SiO)₄Si, III + SiCl₄, 159.5.degree., -, 0.901, 1.3833, -.

L2 ANSWER 34 OF 38 HCPLUS COPYRIGHT 2002 ACS

AN 1959:70626 HCPLUS

DN 53:70626

OREF 53:12785e

TI Structure of powdery dioxodisiloxane

AU Becherer, Gerhard; During, Ottmar

CS Martin Luther Univ., Halle-Wittenberg, Germany

SO Chem. Tech. (Berlin) (1958), 10, 660-1

DT Journal

LA Unavailable

AB The structure of the title compd., (HSiO_{1.5})_x, was
 detd. by Fourier analysis of the Debye-Scherrer diagram.

L2 ANSWER 35 OF 38 HCPLUS COPYRIGHT 2002 ACS

AN 1959:49843 HCPLUS

DN 53:49843

OREF 53:8902h-i,8903a

TI Image-transfer-receiving layers

IN Gray, Russell H.

PA E. I. du Pont de Nemours & Co.

SO Continuation-in-part of U.S. 2,694,637 (C.A. 49, 2919b)

DT Patent

LA Unavailable

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI US 2878121 19590317 US

AB A receiving layer for use in an inversion-transfer process is prep'd. by
 coating a support with a dispersion in a water-permeable colloid of finely
 divided inert solid particles which are coated with a compd. contg. at
 least one SiH group. A more dense image is formed than when uncoated
 particles, e.g. SiO₂, are used because the SiH groups cause reduction of
 the Ag-ion complexes to Ag. Thus, 4 g. SiO₂ particles having an av. diam.
 of 0.015 .mu. were coated with trichlorosilane. This was hydrolyzed to
 form a coating of (HSiO_{1.5})_n in which n is 1 or more
 and the coating constituted 15-20% of the total wt. The particles are
 dispersed in 1l. of a 5% aq. gelatin soln. and coated on paper.

L2 ANSWER 36 OF 38 HCPLUS COPYRIGHT 2002 ACS

AN 1958:108827 HCPLUS

DN 52:108827

OREF 52:19238c-e

TI Polysiloxanes

IN Wagner, Geo. H.; Erickson, Charles E.

PA Union Carbide Corp.

DT Patent

LA Unavailable

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2844435		19580722	US	
AB	Anhyd. condensation of certain substituted silanes to form polysiloxanes is accomplished by heating a substituted silane of the type H(RO)Si(Y)Cl, where R is an alkyl group and Y is Cl or an alkoxy group, in the presence of AlCl ₃ or BC ₁₃ . EtCl (and possibly also Et ₂ O) is evolved and a condensed polysiloxane is formed. For example, 100 cc. HSi(OEt) ₂ Cl was added to 0.1 g. AlCl ₃ and the mixt. refluxed for 2 hrs. EtCl and Et ₂ O were evolved, leaving a solid corresponding to a polymer of HSiO_{1.5} . It is believed that org. groups and H atoms remain bonded to the Si atoms during the reaction. Continuation-in-part of U.S. 2,731,485 (C.A. 50, 8247g).				

L2 ANSWER 37 OF 38 HCPLUS COPYRIGHT 2002 ACS

AN 1956:59456 HCPLUS

DN 50:59456

OREF 50:11152b-d

TI Mica form of the silicon oxide hydride [**HSiO_{1.5}**]x

AU Wiberg, Egon; Simmler, Walter

CS Univ. Munich, Germany

SO Z. anorg. u. allgem. Chem. (1956), 283, 401-13

DT Journal

LA Unavailable

AB cf. C.A. 50, 10588e. In C₆H₆ the reaction of HSiCl₃ with H₂O in a 1:1.5 ratio yields a white ppt. of **HSiO_{1.5}**, whereas in Et₂O a clear soln. results. Colorless, transparent, mica-like crystals of **HSiO_{1.5}** are formed by removing the Et₂O and HCl at -40.degree. in vacuo. In this form **HSiO_{1.5}** is stable in air and relatively inert. It decomp. thermally by the stepwise loss of H and changes color from yellow to orange to golden brown. This change is a polymerization process involving the formation of Si-Si bonds which converts the layer structure of **HSiO_{1.5}** to a 3-dimensional polymer Si₂O₃. The hydrolysis is a stepwise process with HCl splitting out between partially hydrolyzed HSiCl₃ mols. to form rings, then chains, and finally sheets. The effect of replacing HSiCl₃ with RSiCl₃ is reviewed.

L2 ANSWER 38 OF 38 HCPLUS COPYRIGHT 2002 ACS

AN 1952:2479 HCPLUS

DN 46:2479

OREF 46:422b-f

TI Silicoorganic compounds. XII. The action of certain aliphatic alcohols on trialkoxysilanes

AU Reilly, Albert F.; Post, Howard W.

CS Univ. of Buffalo, Buffalo, NY

SO J. Org. Chem. (1951), 16, 383-6

DT Journal

LA Unavailable

AB cf. C.A. 45, 5644b. Refluxing 38 g. (EtO)₃SiH (I) in 50 cc. anhyd. ether with 14 cc. PrOH 10 hrs. and fractionally distg. the mixt. give 17% (EtO)₂(PrO)SiH, b₇₅₀ 140-5.degree., nD₂₅ 1.3817, d₄₂₅ 0.8811, mol. refraction (MR) 46.92. With 28 cc. PrOH, 16% EtO(PrO)₂SiH, b₇₄₅ 162-5.degree., nD₂₅ 1.3878, d₄₂₅ 0.8804, M R 51.34, is formed. I (1 mol.) and 1 mol. BuOH give 14% EtO(BuO)₂SiH, b₇₄₂ 188-95.degree., nD₂₅ 1.3980, d₄₂₅ 0.8830, M R 60.09. I and AmOH (1:1) give 23% (EtO)₂(AmO)SiH, b₇₄₇ 153-5.degree., nD₂₅ 1.3858, d₄₂₅ 0.8807, M R 55.19. (PrO)₃SiH (II) and

BuOH (1:1) give 23% $(\text{PrO})_2(\text{BuO})\text{SiH}$, b744 210-12.degree., nD25 1.3987, d425 0.8794, M R 60.86; with a 1:2 ratio, 30% $(\text{BuO})_2(\text{PrO})\text{SiH}$, b745 215-17.degree., nD25 1.4025, d425 0.8695, M R 65.60, is formed. II and AmOH (1:1) give $(\text{PrO})_2(\text{AmO})\text{SiH}$, b741 211-18.degree., nD25 1.4025, d425 0.8724, M R 65.32; with a 1:2 ratio, 20% $(\text{AmO})_2(\text{PrO})\text{SiH}$, b748 235-40.degree., nD25 1.4100, d425 0.8742, M R 74.40, is formed. $(\text{BuO})_3\text{SiH}$ (III) and AmOH (1:1) give 16% $\text{AmO}(\text{BuO})_2\text{SiH}$, b751 255-60.degree., nD25 1.4127, d425 0.8739, M R 74.34; with a 1:2 ratio, 13% $(\text{AmO})_2(\text{PrO})_2\text{Si}$, b7 146-9.degree., nD25 1.4169, d425 0.8922, M R 94.34, is formed. Refluxing 100 g. I in 100 cc. ether 24 hrs. with 5 cc. H₂O gives 23% $[(\text{EtO})_2\text{SiH}]_2\text{O}$, b25 94-7.degree., nD25 1.3864, d425 0.9412, M R 62.54. In the same way II gives 15% $[(\text{PrO})_2\text{SiH}]_2\text{O}$, b13 131-3.degree., nD25 1.4024, d425 0.9591, M R 78.55; III gives 20% $[(\text{BuO})_2\text{SiH}]_2\text{O}$, b6 146-50.degree., nD25 1.4104, d425 0.9151, M R 99.19, in addn. to some $(\text{BuO})_5\text{Si}_3\text{O}_2$, b7 155-60.degree., nD25 1.4110, d425 0.9276, M R 129.48, and some $(\text{BuO})_6\text{Si}_4\text{O}_3$, b10 175-9.degree., nD25 1.4131, d425 0.9562, M R 157.02. Similar treatment of $(\text{AmO})_3\text{SiH}$ gives a mixt. of polymeric substances assumed to exist in various stages of hydrolysis, probably as far as $(\text{HSiO}_1.5)_x$.